



U. S. Steel
Clairton Works
400 State Street
Clairton, PA 15025-1855

June 8, 1994

Director, Air Toxics and Radiation Division
U. S. EPA Region III
841 Chestnut Street
Philadelphia, PA 19107

SUBJECT: 1993 Summary Reports - Leak Detection and Repair of Equipment in Benzene Service
USS Clairton Works, Clairton, Pennsylvania

Dear Sir or Madam:

Please find enclosed two copies each of the following benzene NESHAPS monitoring reports:

Leak Detection and Repair of Equipment in Benzene Service for the Period January 1993
through June 1993.

Leak Detection and Repair of Equipment in Benzene Service for the Period July 1993 through
December 1993.

These reports summarize the results of the monitoring of equipment in benzene service for
fugitive emissions at USS Clairton Works facility located in Clairton, Pennsylvania. These
reports have been prepared by Chester Environmental to satisfy the requirements promulgated
by 40 CFR 61 Subparts L and V.

If you have any questions regarding this package, please call me at (412) 233-1101.

Sincerely,

H. R. McCallum
Manager Environmental Control

HRM/kb-94207
Attachments



USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA

Report on

LEAK DETECTION AND REPAIR
OF EQUIPMENT IN BENZENE SERVICE
FOR THE PERIOD
JANUARY 1993 THROUGH JUNE 1993

MAY 1994

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA

Report on

LEAK DETECTION AND REPAIR
OF EQUIPMENT IN BENZENE SERVICE
FOR THE PERIOD
JANUARY 1993 THROUGH JUNE 1993

MAY 1994

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Project No.: 3934-44-02

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1.0 INTRODUCTION

As required by Code of Federal Regulations, Title 40, Part 61 (40 CFR 61), Subpart L (National Emission Standard for Benzene Emissions from Coke By-Product Recovery Plants, Subpart V (National Emission Standard for Equipment Leaks [Fugitive Emissions Sources]), and Subpart FF (National Emission Standard for Benzene Waste Operations), leak detection and repair of equipment in benzene service and benzene waste service was conducted at the USS Clairton Works facility located in Clairton, Pennsylvania. This report summarizes the results of the monitoring activities for the period January 1993 through June 1993 and includes updates on process component changes and leak records of equipment in benzene service at USS Clairton Works. All monitoring and reporting activities were completed by Chester Environmental.

Equipment "in benzene service" is defined as that equipment which contains or contacts a fluid (liquid or gas) that is at least 10 percent benzene by weight or an exhauster that contains or contacts a fluid (liquid or gas) at least 1 percent benzene by weight. The following four streams at USS Clairton Works meet the requirements of this regulation:

- Raw gas is greater than 1 percent benzene by weight and is present in the axi compressors (USS Clairton Works does not use exhausters)
- Sub gas is greater than 10 percent benzene by weight and contacts the main regenerators, sub gas vacuum machines (dual axes), sub gas coolers, sub gas separators, and light oil regenerators
- Sub sub (sub squared) gas is greater than 10 percent benzene and contacts light oil regenerators, sub gas coolers, and separators
- Light oil contains greater than 10 percent benzene by weight, and contacts all separators, coolers, decanters, and transfer line to Aristech. Light oil is also used to wash screens in final cooler and to periodically wash both main and light oil regenerators.

As required by 40 CFR 61 Subpart FF, the emergency contaminated water holding tanks and associated vent system at USS Clairton Works came under this program in August 1992. This Subpart provides a benzene leak definition from closed vent systems and storage tanks, and sets recovery efficiencies of control systems.

2.0 METHODOLOGIES

Summaries of the record keeping requirements, leak detection monitoring requirements, and initial and subsequent semiannual reporting requirements pertaining to 40 CFR 61, Subparts J and V can be found in Appendix A. Specific aspects of these requirements are described below.

2.1 Identification of Equipment in Benzene Service

Inasmuch as the operation of the by-product processes require continual process piping maintenance which may involve physical changes in the processes, the program requires a thorough review of the operations to ensure that all equipment in benzene service is recognized and monitored. Appendix B contains a complete up-to-date listing of the components in benzene service. The tables in this appendix also provide a list which refers to line schematics on which the components are depicted. The revised indices of drawings and any new or revised drawings are included in Appendix C. The indices of the drawings include a summary of the components in benzene service and revision dates of piping diagrams.

2.2 Monitoring of Equipment in Benzene Service

Monitoring of equipment in benzene service was performed in accordance with EPA Stationary Source Sampling Method 21, Determination of Volatile Organic Compound Leaks. This method describes the selection and calibration of monitoring equipment as well as procedures used in the actual monitoring.

A Thermo Environmental Instruments, Inc. Model A-580S Intrinsically Safe Organic Vapor Meter was used for monitoring. The unit is equipped with a photoionization

detector (PID) and an 11.8 eV source. It requires no fuel or other gases to operate. A gas standard containing approximately 10,000 ppmv hexane in nitrogen was used for instrument calibration. Other concentration standards were prepared by diluting the hexane gas standard with known volumes of air. Three-point calibrations were conducted at the beginning of each day of monitoring and a one-point verification was conducted at the end of the monitoring day.

All accessible components were monitored on a monthly, quarterly, semiannual, or annual basis as required by the applicable Subparts (at the request of USS Clairton Works, the alternative monitoring plans described in these Subparts are not followed). It should be noted that many major components, such as Axi Compressors, regenerators, and final coolers, are not in service at all times due to intermittent use. Monitoring of these components is carried out only if the equipment is in service at the time of monitoring. A record of equipment in service at each operating location during monitoring trips is included in Appendix B.

Depending on the particular piece of equipment monitored, a leak is defined, in general, as any emission which results in a monitor reading greater than or equal to either 500 ppmv or 10,000 ppmv (as hexane), or any visible leak. Any leaking components must have the initial repair attempted within 5 days of the determination; final repairs must be completed within 15 days of the determination.

3.0 RESULTS

For the period January 1993 through June 1993, five components in benzene service were found to be leaking. The leaking components have been summarized in Table 1. The monitoring log sheets and calibration data can be found in Appendix D.

USS CLAIRTON WORKS
CLAIRTON, PENNSYLVANIA

TABLE 1

SUMMARY OF LEAKING COMPONENTS
JANUARY 1993 THROUGH JUNE 1993

GROUP	TAG	CONTROL		FIGURE	TYPE EQUIPMENT	DESCRIPTION	FIRST		SECOND	
		ROOM	USX ID				DATE	PPM	DATE	PPM
F	451			81	N CARBON DRUM	NORTH CARBON ADSORBER VENT 98% RECOVERY	29-APR-93	< 98%	23-JUN-93	< 98%
F	525			81	WATER TANK	TOP OF TANK INSPECTION HATCH	23-JUN-93	> 10000 V O		
F	526			81	WATER TANK	CENTER TANK TOP RELIEF 7 O'CLOCK	23-JUN-93	> 500		
F	527			81	WATER TANK	CENTER TANK TOP RELIEF 9 O'CLOCK	23-JUN-93	> 10000 V O		
F	528			81	WATER TANK	CENTER TANK TOP INSPECTION HATCH 11 O'CLOCK	23-JUN-93	> 10000 V O		
F	212	2	D-600	58	SEPERATOR	DRAIN CONTROL VALVE TO DECANTER	27-APR-93	1200 V		
F	226	2	D-624	62	SEPERATOR	PRESSURE TAP AFTER RELIEF VALVE	28-APR-93	> 10000		

V = VISIBLE LEAK

O = LEAK DETECTED BY ODOR



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